

WHAT IS CLAIMED IS:

1. A video-on-demand system which is comprised of a supervisor processor, and a co-processor, which are intercoupled via a bus;

5 said supervisor processor having a supervisor memory and said co-processor having a co-processor memory;

10 a supervisor control program, in said supervisor memory, which includes - a) a means for transferring a group of video data packets from an externally stored complete video into said supervisor memory, b) a means for building in said supervisor memory, a respective subgroup of internet protocol headers for each video data packet in said group, and c) a means for constructing in said co-processor memory, a
15 transmission control list which indicates how each video data packet in said group and its respective subgroup of internet protocol headers can be accessed from said supervisor memory; and,

20 a co-processor control program, in said co-processor memory, which includes - a) a means for partitioning into pieces, each video data packet and its respective subgroup of internet protocol headers as identified by said transmission control list, and b) a means for sending each piece, with an additional header,
25 to an output port during spaced apart time slots.

2. A video-on-demand system according to claim 1 wherein said means for building builds multiple variables, for each respective subgroup of internet protocol headers, that change with each subgroup.

3. A video-on-demand system according to claim 1 wherein said means for building builds a variable for each respective subgroup of internet protocol headers, that changes as a function of the corresponding video
5 data packet.

4. A video-on-demand system according to claim 1 wherein said means for constructing constructs in said list, a respective pointer and a respective byte count and a respective set of flags for each video data packet
5 in said group and for each subgroup of internet protocol headers.

5. A video-on-demand system according to claim 1 wherein said means for constructing constructs in said list, just one pointer for every video data packet in said group, and just one other pointer for every subgroup
5 of internet protocol headers, and a respective set of flags for each video data packet in said group and for each subgroup of internet protocol headers.

6. A video-on-demand system according to claim 1 which further includes a host processor that is coupled via another bus to said supervisor processor, and wherein said complete video is stored in a host memory for said
5 host processor.

7. A video-on-demand system according to claim 1 wherein said means for transferring receives a series of requests from said co-processor, and in response to each of said requests, transfers a different group of said
5 video data packets from said complete video into said supervisor memory.

8. A video-on-demand system according to claim 1 wherein said means for partitioning and said means for sending are implemented by a single set of instructions which partition and send any selected item from said
5 transmission control list regardless of whether said selected item is one subgroup of internet protocol headers or one video data packet.

9. A video-on-demand system according to claim 1 wherein said means for partitioning - a) first partitions one subgroup of internet protocol headers from said transmission control list, b) then partitions the
5 corresponding video data packet from said transmission control list, and c) continues the above sequence in a repetitive fashion.

10. A video-on-demand system according to claim 1 wherein said means for partitioning - a) includes a pair of pointers that each point to a different transmission control list, and b) alternately uses one pointer of said
5 pair to select and partition said video data packets and said respective subgroups of internet protocol headers, while concurrently, requesting said supervisor processor to update the other pointer of said pair.

11. A video-on-demand system according to claim 1 wherein said means for partitioning partitions each video data packet and its respective subgroup of internet protocol headers into a single piece of a first type,
5 multiple pieces of a second type, and a single piece of a third type, where said single piece of said first type includes said respective subgroup of internet protocol headers plus an initial portion of said video data packet, each piece of said second type includes an
10 intermediate portion of said video data packet, and said single piece of said third type includes a remaining portion of said video data packet plus a trailer.

12. A video-on-demand system according to claim 11 wherein said additional header, which is attached to each partitioned piece, is an asynchronous transfer mode header.

13. A video-on-demand system according to claim 1 wherein said means for partitioning partitions each video data packet and its respective subgroup of internet protocol headers into a single piece to which said additional header is attached.

14. A video-on-demand system according to claim 13 wherein said additional header, which is attached to each partitioned piece, is an ethernet header.